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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,481	09/04/2003	Yosuke Fujii	TOW-041RCE2	8703
959 7590 11/03/2008 LAHIVE & COCKFIELD, LLP FLOOR 30, SUITE 3000 ONE POST OFFICE SQUARE BOSTON, MA 02109				
EXAMINER				
HODGE, ROBERT W				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
11/03/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/656,481

**Applicant(s)**

FUJII ET AL.

**Examiner**

ROBERT HODGE

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see Remarks and the English Translation of the Foreign Priority Document, filed 9/9/08, with respect to the rejection of claims 1, 2 and 6 under 35 U.S.C. 103(a) have been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 5,912,088.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 5,912,088 hereinafter Ernst in view of U.S. Patent No. 5,464,700 hereinafter Steck.

As seen in figures 3 and 4, Ernst teaches a fuel cell comprising an electrolyte electrode assembly 300 and 400 (EEA), including a pair of electrodes 308 and 308' that sandwich an electrolyte 306, the electrodes include gas diffusion layers 312 and 312', first and second metal separators 200 and 200' that sandwich the EEA each having respective reactant gas flow fields 204 and 204' for supplying reactants to said electrodes, a seal member 304 and 304' having a main seal with an outer boundary wholly interposed between and contacting said first separator and said electrolyte and an inner portion 406 and 406' interposed between and contacting the first separator and

a planar portion or the other gas diffusion layer, wherein said inner portion of the seal member includes a flow field wall defining one portion of power generation areas of said electrodes, wherein a side of said flow field wall, said outer region of said other gas diffusion layer and said first metal separator define an outermost one of said reactant gas flow fields. Ernst further teaches in figures 3 and 4 that the first separator includes a surface in contact with said electrode and a flat surface spaced from said electrode, said seal member further includes a main seal interposed between said electrolyte and said flat surface and said flow field wall is interposed between said outer region of said other gas diffusion layer and said flat surface. See column 3, line 48 – column 3, line 29, column 4, line 62 – column 6, line 26 and column 7, line 51 – column 8, line 21.

Ernst does not teach that a surface area of one of the gas diffusion layers is larger than the surface area of the other gas diffusion layer.

As seen in figure 6, Steck teaches a fuel cell comprising an electrolyte electrode assembly (EEA) 40 including a pair of electrodes 18 and 20 with an electrolyte 16 interposed between said electrodes, said electrodes include gas diffusion layers (i.e. carbon fiber electrodes) with respective electrode catalyst layers facing said electrolyte (i.e. electrochemically active portion), wherein a surface area of the electrode (i.e. gas diffusion layer (GDL)) 20 is larger than the surface area of the electrode (i.e. GDL) 18 and electrode (i.e. GDL) 20 includes an outer marginal region extending outwardly beyond an outer region of electrode (i.e. GDL) 18, two electrically conductive separators 22 and 24 sandwich the EEA with respective reactant gas flow fields, a seal member 12 having an outer portion (around 18b) interposed between and contacting the separator

22 and the electrolyte 16 and an inner portion 12c interposed between and contacting the separator 22 and the electrode (i.e. GDL) 18, wherein the inside portion of the inner portion 12c of the seal member acts as a flow field wall, and the flow field wall, said outer region (around 18b) and said separator 22 define an outermost one of said reactant gas flow fields. Steck also teaches that the separator 22 includes a surface in contact with the electrode 18 and a flat surface spaced from said electrode, said seal member includes a main seal interposed between said electrolyte and said flat surface and said flow field wall is interposed between said outer region of said the GDL and said flat surface. See also column 1, lines 15-38, column 2, line 63 – column 3, line 26 and column 4, line 56 – column 6, line 11.

At the time of the invention it would have been obvious to optimize the size of the gas diffusion layers such that one has a larger surface area than the other in Ernst as taught by Steck in order to reduce the amount of membrane material required as well as minimizing and/or eliminating contact between the separator plates thus reducing any corrosive attack on the separator plates and also reducing contamination of the membrane from the separator plates.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernst in view of Steck as applied to claim 1 above, and further in view of U.S. Pre-Grant Publication No. 2002/0119358 hereinafter Rock.

Ernst further teaches that the reactant gas flow field is a serpentine flow passage having at least one turn region (figure 2, column 2, line 65 - column 3, line 2).

Ernst as modified by Steck does not teach a partition seal.

Rock teaches a bipolar plate assembly with reactant gas flow fields for fuel cells wherein a seal member includes a flow field wall between the outer region of a gas diffusion layer and a separator flat surface, said reactant gas flow field is a serpentine flow passage having at least one turn region and a partition seal is in contact with the electrolyte membrane and the reactant gas flow fields (abstract, paragraphs [0006]-[0011], [0027]-[0032], [0036], [0038]-[0040] and [0044]).

At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide a partition seal in Ernst as modified by Steck as taught by Rock in order to provide a more compact fuel cell stack that has superior sealing characteristics and utilizes fewer parts for the purpose of assembly.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/  
Examiner, Art Unit 1795